

Machine Translation of JP 8-53307

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Notes:

1. Untranslatable words are replaced with asterisks (***).
2. Texts in the figures are not translated and shown as it is.

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Dictionary: Last updated 12/14/2009 / Priority: 1. Chemistry / 2. Manufacturing/Quality / 3. Technical term

FULL CONTENTS

[Claim(s)]

[Claim 1]An anionic surfactant and a constituent for antimicrobial washing containing
****- oxyethylene (dimethylimino) ethylene(dimethylimino) ethylene dichloride.

[Claim 2]The constituent for antimicrobial washing according to claim 1 whose above-mentioned anionic surfactant is an alkanolamine salt (however, a carbon number of an alkanol portion is 2 or 3) of talloil fatty acid and/or tall rosin fatty acid.

[Claim 3]The constituent for antimicrobial washing containing a nonionic surface active agent according to claim 1 or 2.

[Detailed Description of the Invention]

[0001]

[Industrial Application]This invention relates to the constituent for antimicrobial washing used when washing the skin or clothing, furniture or the general merchandise for days, such as fingers, etc.

[0002]

[Description of the Prior Art]The disinfectant cleaner which added to soap the carbolic acid which is a disinfectant component for many years, cresol, etc. has been used for disinfection washing of the skins, such as fingers, clothing, etc. Or sterilization disinfection is presented also with what blended the Sari Chill anilide system compound and the benzoic acid derivative with soap. Hexachlorophene, triclosan (2,4,4'-trichloro-2'-hydroxy diphenyl ether), etc. which the biphenyl system compound etc. are used as a germicide, and also halogenated, and reinforced sterilizing properties are developed. However, these disinfection and sterilizing components have a problem of there being carcinogenicity or generating the dioxin of a deadly poison at the time of incineration, and use is restricted.

[0003]A cationic surfactant and an amphoteric surface active agent are mentioned, and there is a thing which shows a powerful germicidal action to show a germicidal action in addition to the another side above-mentioned germicide in these. [for example the benzalkonium chloride of a cationic surfactant, benzethonium chloride, chlorhexidine glyconate, hydrochloric acid alkyl di(aminoethyl)glycine of an amphoteric surface active

agent, etc.] It is used for disinfection of the skins, such as fingers, and also it is blended with a rinse agent or a shampoo agent, or is blended with baths. however, temporal, when these cations and an amphiphilic surface active agent system germicide have dry rough skin and mucosal irritation and it adheres to textiles, or warming -- since it sometimes yellows, corrosion behavior is also pointed out.

[0004]

[Problem to be solved by the invention]As a cleaning component of a cleaning agent, although the anionic surfactant is generally used, if a cationic surfactant is mixed as a germicide to this anionic surfactant, in order to form a poorly soluble salt, it is known that the antibacterial action which the cationic surfactant had will be checked remarkably. Therefore, it was made difficult to give an antibacterial action collectively to the cleaning agent which made the general-purpose anionic surfactant the principal component by blending a cationic surfactant with a powerful germicidal action.

[0005]What is satisfied in respect of [all the] coloring, the contamination and the off-flavor, or environmental pollution to washed objects, such as safety to human bodies, such as a stimulus and dry rough skin, and clothing, etc. also about the above-mentioned conventional disinfection and germicides other than a cationic surfactant was not known.

[0006]In addition, there was no antimicrobial cleaning agent of also demonstrating the disinfection antimicrobial effect collectively making washing into a key objective like [since the above-mentioned disinfectant cleaner used conventionally mainly aims at sterilization disinfection, its detergency is weak, and] wash.

[0007]This invention was made in view of the above situations, and is ****. Carrying out washing of the skin of **, clothing, furniture, the general merchandise for days, etc., and wash, it is what shows sterilization and a disinfection effect simultaneously, and the purpose is providing the constituent for antimicrobial washing with high safety.

It invents bearing in mind providing using for sterilization cleaning, such as clothing, such as a medical staff or a patient, bedding, daily necessities, furniture, and furniture, and wash especially with the optimum constituent for antimicrobial washing.

[0008]

[Means for solving problem]The constituent for antimicrobial washing concerning this invention contains an anionic surfactant and ****- oxyethylene (dimethylimino) ethylene(dimethylimino) ethylene dichloride (PMIEC is called hereafter). It is preferred to use the above-mentioned anionic surfactant as the alkanolamine salt (however, the carbon number of an alkanol portion is 2 or 3) of talloil fatty acid and/or tall rosin fatty acid. A nonionic surface active agent may be added to the above-mentioned constituent for antimicrobial washing.

[0009]

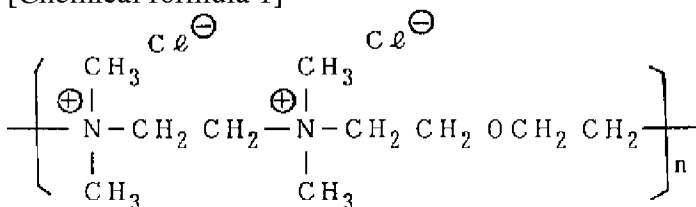
[Function]It is indicated by JP,5-310505,A that PMIEC has a powerful antibacterial action. However, since PMIEC was a cation nature compound, when it mixed with the anionic surfactant, inactivation of the poorly soluble salt was generated and carried out, and an antibacterial action and detergency were considered [disappearance or] to be prevented remarkably.

[0010]However, in this invention persons' research, when it dared to have added PMIEC to an anionic surfactant, it turned out that there is little each inhibition to an antibacterial action and detergency. Especially the thing that added PMIEC to an anionic surfactant called the alkanolamine salt of talloil fatty acid or tall rosin fatty acid found out having

the characteristics as a very desirable constituent for antimicrobial washing. PMIEC used as antibacteria medicine in this invention has a constitutional formula shown in the following-ization 1, and is obtained as a polycondensation body of the molecular weight 3000-10000.

[0011]

[Chemical formula 1]



[0012]PMIEC is water solubility and has been used as a growth inhibitor of the algae which cause biological pollution of the service water in a factory related facility etc. conventionally, iron bacteria, and a slime formation microorganism. Oral toxicity (LD₅₀) is kg, 3690mg (rat male) /, and low toxicity, and since there is also little stimulativeness over the skin or an eye at no odor, it can be used also for the textiles which touch a human body directly in comfort. PMIEC prevents growth of various bacteria and growth, and also is excellent in the antimicrobial activity to methicillin resistance Staphylococcus (MRSA). And it can have very strong compatibility to cotton, cell rose derivation chemical fiber, wool, silk, some synthetic fibers, etc., can adhere to these textiles easily and strongly, and can be made to hold long. Therefore, antimicrobial activity is maintained even after several wash. When the usual cationic surfactant system antibacteria medicine is used for textiles as mentioned above, this is made to yellow, but PMIEC does not impair the characteristic of textiles.

[0013]The anionic surfactant in this invention acts as a cleaning agent, and a publicly known thing is used conventionally. For example, fatty acid, alkyl sulfuric acid, alkylamide sulfuric acid, alkyl sulfonic acid, Alkylarylsulfonic acid, oxyethylene-ized alkyl ether carboxylic acid, Oxyethylene-ized alkyl ether sulfuric acid, oxyethylene-ized alkyl aryl ethereal sulfate, Sodium salt, such as sulfo succinic acid and alpha olefin sulfonic acid, calcium salt, a monoethanolamine salt, a diethanolamine salt, a triethanolamine salt and (n- or iso-) a propylamine salt, or phosphate is mentioned.

[0014]What was used as the alkanolamine salt (however, the carbon number of an alkanol portion 2 or 3) by using especially talloil fatty acid and tall rosin fatty acid as a raw material is preferred.

[0015]Tall oil and tall rosin are inexpensive produced in large quantities as a by-product of pulp manufacture. Tall oil carries out refining processing of this including 30 to 50% of oleic acid, 25 to 45% of linolic acid, 0 to 6% of palmitic acid, and 1 to 3% of stearic acid, and talloil fatty acid and tall rosin are obtained. Tall rosin makes a principal component abietic acid, dehydroabietic acid, and palustric acid before long.

[0016]The ethanolamine salt or (n- or iso-) the propanolamine salt of these mixed fatty acid is a cleaning agent especially desirable as a thing meeting the purpose of this invention which there is little stimulativeness over the skin and membrane, and fats-and-oils detergency is excellent, are non-corrosiveness, and there is little dry-rough-skin nature, and also has little environmental pollution nature. What was used as the alkanolamine salt by using as a raw material the tall oil currently refined even to neither

talloil fatty acid nor tall rosin may be used as an anionic surfactant in this invention.

[0017]A nonionic surface active agent general-purpose for washing, enhancement of the wash effect, and adjustment of foamability can also be used together with the above-mentioned anionic surfactant. As a nonionic surface active agent, for example Polyoxyethylene alkyl ether, Polyoxyethylene alkyl aryl ether, polyoxyethylene fatty acid ester, polyoxyethylene sorbitan fatty acid ester, a polyoxyethylene polyoxypropylene blockpolymer, sorbitan fatty acid ester, fatty acid ARUKI roll amide, etc. are mentioned.

[0018]It is preferred to add glycol mono- ether to the constituent for antimicrobial washing as auxiliary ingredients, and, thereby, the solubility of various components, stability, and detergency improve. As this glycol mono- ether, ethylene glycol monobutyl ether, dipropylene glycol monoethyl ether, 3-methyl-3-methoxybutanol, etc. are illustrated. Even if it adds, the acetate, for example, the propylene-glycol-methyl-ether acetate etc., of glycol ether, etc., there is same effect.

[0019]Once dissolving talloil fatty acid or tall rosin fatty acid in glycol mono- ether when adding the above-mentioned glycol mono- ether, the method of making alkanolamine react and using as an alkanolamine salt is easy operationally.

[0020]As for the chelating agent with the ion blockade effect, it is also effective to add this to the constituent for antimicrobial washing. As a chelating agent, an ethylenediaminetetraacetic acid-disodium salt, ethylenediaminetetraacetic acid-3 sodium salt, nitrilotriacetic acid sodium salt, etc. can mention.

[0021]It is good to dilute and use so that the thick liquid of the constituent for antimicrobial washing may be prepared first and the concentration of PMIEC may be about 0.1 to 0.01weight % on the occasion of actual use of the constituent for antimicrobial washing concerning this invention at the time of use.

[0022]The example of a blending ratio with each preferred component in the thick liquid of the above-mentioned constituent for antimicrobial washing is shown below.

0.3 to 10 weight % of anionic surfactant 5 to 20 weight % nonionic surface active agent 0 to 20 weight % glycol ether 0 to 20 weight % chelating agent 0 to 10 weight % PMIEC(s)
**** sum total 100 weight % [0023]

[Working example]Although an embodiment is given and the invention in this application is explained concretely hereafter, this invention is not limited to these embodiments. Unless it mentions specially below, % expresses weight % and a part expresses a weight section. On the occasion of actual use, the thick liquid of each embodiment is diluted and used 50 to 500 times.

[0024]<Embodiment 1> sodium-lauryl-sulfate 17% ethylene-glycol-monobutyl-ether 20% disodium ethylenediaminetetraacetate 2%PMIEC 5% water Above-mentioned each component was dissolved in water ***** 100%, and the constituent liquid for antimicrobial washing (thick liquid) was obtained.

[0025]<Embodiment 2> oleic acid tri-isopropanolamine salt . 10% polyoxyethylene (n= 10) nonylphenyl ether 7% 3-methyl-3-methoxybutanol 10% disodium ethylenediaminetetraacetate 4% PMIEC 5% water ***** 100%. [six copies of oleic acid] Add gradually 20 copies of 20% tri-isopropanolamine aqueous solutions, they were made to react, having dissolved in ten copies of 3-methyl-3-methoxybutanol, and agitating, and it was considered as the oleic acid tri-isopropanolamine salt. In addition, it dissolved and equalized and water adjusted to 100 copies so that it might become the above-mentioned loadings about polyoxyethylene nonylphenyl ether, a PMIEC aqueous

solution, and disodium ethylenediaminetetraacetate there, and the constituent liquid for antimicrobial washing (thick liquid) was obtained.

[0026]<Embodiment 3> tall oil monoethanolamine . the 20% dipropylene glycol monoethyl ether 15% ethylenediaminetetraacetic acid 3 -- sodium 3% PMIEC 5% water 16 copies of tall oil is dissolved in 15 copies of dipropylene glycol monoethyl ether ***** 100%, and, Add gradually, four copies of monoethanolamines were made to react, agitating, and it was considered as tall oil monoethanolamine. It dissolved and equalized, in addition, it adjusted so that it might become 100 copies with water, so that it might become the above-mentioned loadings about a PMIEC aqueous solution and ethylenediaminetetraacetic acid 3 sodium at this, and the constituent liquid for antimicrobial washing (thick liquid) was obtained.

[0027]<Embodiment 4> talloil-fatty-acid diethanolamine salt . 12% Tall rosin diethanolamine salt . 3% polyoxyethylene (n= 12) oleyl ether 10% propylene-glycol-monomethyl-ether 10% nitrilotriacetic acid sodium 2% PMIEC 5% water ***** 100%. [8.7 copies of talloil fatty acid, and 2.1 copies of tall rosin] Add gradually, 4.2 copies of diethanolamines were made to react, having dissolved in ten copies of propylene glycol monomethyl ether, and agitating, and it was considered as the talloil-fatty-acid diethanolamine salt and the tall rosin diethanolamine salt. It dissolved and equalized, in addition, it prepared so that it might become 100 copies with water, so that it might become the above-mentioned loadings about polyoxyethylene oleyl ether, a PMIEC aqueous solution, and nitrilotriacetic acid sodium at this, and the constituent liquid for antimicrobial washing (thick liquid) was obtained.

[0028]<Embodiment 5> (examination about various test liquid)

[the 0.1% aqueous solution of the mono- gene Y500 (Dai-Ichi Kogyo Seiyaku / Co., Ltd. / Co., Ltd. / make: higher alcohol sulfuric acid ester sodium salt 95%; anionic surfactant)] The PMIEC aqueous solution was added so that it might become each concentration whose last concentration of PMIEC is 0.003%, 0.01%, and 0.1%, and it was considered as test liquid (diluted solution for antimicrobial washing).

[0029]The test liquid which added the benzalkonium chloride (cationic surfactant) to the 0.1% aqueous solution of the mono- gene Y500 as a germicide was prepared for comparison with the above-mentioned PMIEC (cationic surfactant). The last concentration of this benzalkonium chloride is 0.003%, 0.01%, and 0.1%.

[0030]The PMIEC aqueous solution or the benzalkonium chloride was added to the 0.1% aqueous solution of polyoxyethylene (n= 10) lauryl ether (nonionic surface active agent), and it was considered as test liquid (diluted solution for antimicrobial washing). PMIEC and the last concentration of a benzalkonium chloride are 0.01% respectively.

[0031]The test liquid of only germicides, such as PMIEC or a benzalkonium chloride, i.e., the test liquid which contains neither the above-mentioned anionic surfactant nor a nonionic surface active agent, was adjusted. PMIEC and the last concentration of a benzalkonium chloride are 0.01% respectively also in this case.

[0032]The thing of only a cleaning agent, i.e., the 0.1% aqueous solution of the mono-gene Y500, and the 0.1% aqueous solution of polyoxyethylene (n= 10) lauryl ether were used as test liquid as blank.

[0033]Next, the cotton cloth was put in the test liquid (an embodiment, comparative example) of each above, after washing once, it washed, and it dried (this is hereafter called washing treatment). The method of washing treatment was performed according to

the method of JIS L0217-103.

[0034]The antibacterial effect examination was done about the cloth after these washing treatment. In accordance with the number-of-microorganism measuring method (the SEK method) of a textiles sanitary finishing conference, it carried out to the antibacterial effect examination using Staphylococcus aureus. A result is shown in the following table 1.

[0035]

[Table 1]

試験液 No.	殺菌剤（陽イオン界面活性剤）		洗浄剤		接種菌数	回収菌数	備 考
	種 類	濃度（％）	種 類	濃度（％）			
1	—	0	陰イオン界面活性剤	0.1	4×10^5	1×10^9	ブランク
2	PMIEC	0.003	〃	0.1	4×10^5	$>10^7$	実施例
3	〃	0.01	〃	0.1	4×10^5	4×10^4	〃
4	〃	0.1	〃	0.1	4×10^5	$<10^2$	〃
5	塩化ベンザルコニウム	0.003	〃	0.1	4×10^5	$>10^7$	比較例
6	〃	0.01	〃	0.1	4×10^5	6×10^8	〃
7	〃	0.1	〃	0.1	4×10^5	5×10^4	〃
8	PMIEC	0.01	—	0	4×10^5	$<10^2$	実施例
9	塩化ベンザルコニウム	0.01	—	0	4×10^5	1×10^2	比較例
10	—	0	非イオン界面活性剤	0.1	4×10^5	7×10^8	ブランク
11	PMIEC	0.01	〃	0.1	4×10^5	1×10^3	実施例
12	塩化ベンザルコニウム	0.01	〃	0.1	4×10^5	4×10^4	比較例

[0036]As shown in Table 1, [as influence of a cleaning agent on a cationic surfactant] It compares, when a cleaning agent does not live together (test liquid No. 8, test liquid No. 9), When an antibacterial effect is declining when a nonionic surface active agent lives together as a cleaning agent (test liquid No. 11, test liquid No. 12), and an anionic surfactant lives together as a cleaning agent (test liquid No. 2, test liquid No. 6), an antibacterial effect is declining further.

[0037]However, by 0.01% or more of concentration, even if PMIEC is a case (test liquid No. 3, 4) where an anionic surfactant lives together, compared with the case (test liquid No.1) of only an anionic surfactant, the number of recovery of a bacillus is reducing it remarkably. When a nonionic surface active agent lives together (test liquid No. 11), compared with the case (test liquid No. 10) of only a nonionic surface active agent, the number of recovery of a bacillus is decreasing remarkably. That is, PMIEC showed a strong antibacterial effect in 0.01% or more of concentration.

[0038]On the other hand, although a benzalkonium chloride shows a good antibacterial effect in a benzalkonium chloride independent case (test liquid No. 9), [a benzalkonium chloride] An antibacterial effect in the case (test liquid No. 6) of coexisting with the anionic surfactant in 0.01% of concentration was weak, and if 0.1% of a lot of benzalkonium chlorides were not added, an effective antibacterial effect was not expressed.

[0039]As mentioned above, although PMIEC is a cation system surface active agent, it

turns out that there is little the influence even if it makes it coexist with other cleaning agents unlike a benzalkonium chloride, and there are few falls of an antibacterial action even if it is a case where it uses together with the anionic surfactant currently considered that an antibacterial effect declines especially conventionally.

[0040]To the 0.1% aqueous solution of <Embodiment 6> talloil-fatty-acid diethanolamine, the PMIEC aqueous solution was added so that the last concentration of PMIEC might be 0% (blank), 0.01%, and 0.1%, and the constituent liquid for antimicrobial washing was obtained in it. Like the above, the cotton cloth was put in these liquid, after washing once, it washed, and it dried. The washing method was performed according to the method of JIS L0217-103.

[0041]The antibacterial effect examination was done about the cloth after these wash. In accordance with the number-of-microorganism measuring method (the SEK method) of a textiles sanitary finishing conference, it carried out to the antibacterial effect examination using methicillin resistance Staphylococcus. A result is shown in the following table 2.

[0042]

[Table 2]

PMIEC (%)	接種菌数	回収菌数
0 (ﾌﾗﾝｸ)	4×10^5	1×10^9
0.01	4×10^5	2×10^4
0.1	4×10^5	$< 10^2$

[0043]As shown in Table 2, an antibacterial effect which excelled also in PMIEC0.01% and 0.1% of any also in this Embodiment 6 was shown.

[0044]The constituent liquid for antimicrobial washing of the <test which Embodiments 1-4 attach> above-mentioned embodiments 1-4 was diluted with water, and it prepared so that the last concentration of PMIEC might be 0.05%. Like the above-mentioned Embodiment 5, the cotton cloth was put in these constituent aqueous solutions for antimicrobial washing, after washing once, it washed, and it dried (washing treatment). Wash, the flush, and desiccation which are performed about the cloth after this washing treatment using a common cleaning agent were carried out 5 times (this is usually hereafter called wash). The method of wash was usually performed like washing treatment according to the method of JIS L0217-103.

[0045]After one washing treatment, it reached and the antibacterial effect examination was usually done about the cloth after five wash. Like the above-mentioned Embodiment 5, Staphylococcus aureus was used for the antibacterial effect examination, and it carried out in accordance with the number-of-microorganism measuring method (the SEK method) of a textiles sanitary finishing conference. As blank, water was used instead of the constituent liquid for antimicrobial washing of Embodiments 1-4 (0% of the PMIEC last concentration). A result is shown in the following table 3.

[0046]

[Table 3]

供試液	接種菌数	回収菌数	
		1 回洗濯処理	通常洗濯 5 回後
実施例 1	2×10^5	$< 10^2$	1×10^3
実施例 2	2×10^5	$< 10^2$	4×10^3
実施例 3	2×10^5	$< 10^2$	2×10^3
実施例 4	2×10^5	$< 10^2$	5×10^3
ブランク	2×10^6	3×10^8	2×10^9

[0047]As shown in Table 3, the antibacterial effect which was excellent about all of the constituent for antimicrobial washing of Embodiments 1-4 was shown, and not only after washing treatment but after usually washing 5 times, sufficient antibacterial effect was held.

[0048]

[Effect of the Invention]In the constituent for antimicrobial washing concerning this invention, effective antimicrobial treatment can be performed simultaneously, carrying out washing of the skins, such as fingers, clothing, furniture, the general merchandise for days, etc., and wash, since it was made to contain PMIEC using a general and inexpensive anionic surfactant. and this washing antimicrobial treatment -- safety -- it can carry out easily highly. For example, it washed using the constituent for antimicrobial washing of this invention, cloth holds the antibacterial properties for a long period of time, and after the usual wash maintains antibacterial properties.

[Translation done.]